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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/730,767	12/08/2003	Shingo Kiuchi	9333-361	3437

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NBC Tower
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EXAMINER

WOZNIAK, JAMES S

ART UNIT	PAPER NUMBER
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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/730,767	Applicant(s) KIUCHI ET AL.	
	Examiner James S. Wozniak	Art Unit 2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 December 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. Figures 6-7 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated (*see Background in specification*). See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. **Claims 1-20** are objected to because of the following informalities:

In claim 1, line 7 --to obtain a plurality of recognized results-- should be added after "data" in order to provide proper antecedent basis for this limitation later in the claim.

In claim 1, line 8, "the most numerous" should be changed to --a most numerous- in order to provide proper antecedent basis for this limitation in the claim.

In claim 2, lines 2-3, "the start position of the speech region" should be changed to --a start position of a speech region-- in order to provide proper antecedent basis for this limitation in the claim.

In claim 5, line 3, the acronym "A/D" should be expanded to clarify its meaning in the claim.

In claim 5, line 5, "the order of sampling" should be changed to --an order of sampling-- in order to provide proper antecedent basis for this limitation in the claim.

In claim 5, lines 5, "the position" should be changed to --a position-- in order to provide proper antecedent basis for this limitation in the claim.

Claim 8 contains informalities similar to claim 1, and should be corrected in the same above noted manner.

In claim 12, line 3, "the first speech data" should be changed to --a first speech data-- in order to provide proper antecedent basis for this limitation in the claim.

Claims 13 and 17 contain informalities similar to claim 5, and should be corrected in the same above noted manner.

Claim 15 contains informalities similar to claim 1, and should be corrected in the same above noted manner.

Claim 20 contains informalities similar to claim 12, and should be corrected in the same above noted manner.

The remainder of the dependent claims fail to overcome the objections of the independent claims, and thus, are also objected to due to minor informalities.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1, 7-8, and 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujii et al (*U.S. Patent: 4,885,791*) in view of Keiller (*U.S. Patent: 6,975,993*).

With respect to **Claims 1 and 8**, Fujii discloses:

Generating, from speech data for which speech recognition is to be performed, a plurality of pieces of speech data whose start positions of non-speech regions differ (*generating plural possible speech periods having different starting boundaries including varying amounts of unvoiced sounds and noise, Col. 8, Lines 11-49*); and

Performing speech recognition using each of said pieces of speech data (*performing pattern matching using the plural possible speech segments, Col. 8, Lines 11-49*).

Although Fujii discloses the generation of a plurality of possible speech segments for recognition, which each have different starting boundaries including varying amounts of unvoiced sounds and noise and performing speech recognition using those segments, Fujii does not teach providing a speech recognition result using a metric based on the identified most numerous recognized result from among a plurality of obtained recognized results. Keiller, however, recites a plurality of recognition engines utilizing such a metric (*most commonly occurring word or words as recognition result, Col. 21, Lines 1-11*).

Fujii and Keiller are analogous art because they are from a similar field of endeavor in speech recognition systems. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Fujii with the recognition means utilizing the aforementioned scoring metric as taught by Keiller in order to provide a more efficient multi-engine speech recognizer capable of providing a most likely result (*Keiller, Col. 2, Lines 4-8; and Col. 21, Lines 1-11*).

With respect to **Claim 7**, Keiller discloses the multi-engine speech recognizer as applied to Claim 1.

Claim 15 contains subject matter similar to Claims 7 and 8, and thus, is rejected for the same reasons.

5. **Claims 2-6, 9-14, and 16-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujii et al in view of Keiller and further in view of Bi et al (*U.S. Patent: 6,324,509*).

With respect to **Claims 2, 9, and 16**, Fujii in view of Keiller discloses the speech recognition system utilizing a plurality of speech segments, each having different starting boundaries including varying amounts of non-speech data, as applied to claim 1. Fujii further discloses predetermined speech period offset times to include varying amounts of non-speech data (*Col. 10, Line 67- Col. 11, Line 20*). Fujii does not specifically suggest that this plurality of segments is obtained by shifting backwards. Such a backward shift for determining a starting point (*or multiple starting points in the case of Fujii*) of a speech data segment is well known in the speech processing art however, as is evidenced by the Bi reference (*Col. 5, Lines 13-30*).

Fujii, Keiller, and Bi are analogous art because they are from a similar field of endeavor in speech recognition systems. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Fujii in view of Keiller with the concept of backwards searching (shifting) taught by Bi in order to provide a well-known means of achieving the multiple speech data periods in Fujii that can be easily implemented in a real-time processor (*Bi, Col. 5, Lines 24-30*).

With respect to **Claims 3, 11, and 19**, Bi further shows a speech segment endpointer, which determines a speech starting point, as part of a speech recognizer (*Fig. 1, Element 22*).

With respect to **Claims 4, 12, and 20**, Bi discloses the means for determining a speech segment starting point in a speech recognizer, as applied to claim 3, while Fujii discloses that the period of this input segment can be varied to account for an uncertain amount of non-speech data, as applied to Claim 1. Since the period of the speech data is varied only based on an uncertain amount of non-speech data, the speech region would be the same for the plurality of generated segments in Fujii, and thus, identical to the first speech data starting point determined by the endpointer taught by Bi.

With respect to **Claims 5, 13, and 17**, Fujii further discloses an A/D conversion of an input speech signal at a predetermined sampling frequency (*Col. 8, Lines 14-16*), while Bi discloses an circular buffer that stores a sequence of speech data frames in order (*Col. 5, Lines 13-30*). Bi also discloses changing a buffer reading position to determine a speech data starting point, as applied to Claim 2.

With respect to **Claims 6, 14, and 18**, Fujii discloses that individual speech samples are obtained at a rate of 8kHz (*Col. 8, Lines 14-16*).

With respect to **Claim 10**, Fujii further discloses predetermined speech period offset times to include varying amounts of non-speech data (*Col. 10, Line 67- Col. 11, Line 20*).

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Tsuboi et al (*U.S. Patent: 5,457,768*)- discloses a method for speech recognition that allows for a range of starting speech positions.

Wang (*U.S. Patent: 5,596,679*)- discloses a method for comparing speech recognition outputs from a plurality of voting windows to determine a winning output.

Ittycheriah (*U.S. Patent: 5,956,671*)- discloses a method for averaging shifted frames for speech recognition.

Imai et al (*U.S. Patent: 6,236,970*)- teaches a method for preventing the possible omission of speech information by shifting a ring buffer pointer.

Muroi (*U.S. Patent: 6,317,711*)- discloses a method for speech segment detection.

Harada et al (*U.S. Patent: 6,343,269*)- teaches method using a combination of long and short noise measuring periods for speech recognition.

Pao (*U.S. Patent: 6,920,421*)- teaches a method for adapting a speech recognition model based on the closeness of non-speech information to a speech interval.

Yacoub (*U.S. Patent: 7,149,689*)- discloses a multi-engine speech recognition system that selects a result on which the majority of the engines agree.

Singh (*"Speech in Noisy Environments: Robust Automatic Segmentation, Feature Extraction, and Hypothesis Combination," 2001*)- discloses that noise levels in a non-speech period vary in a push-button recording setup.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James S. Wozniak whose telephone number is (571) 272-7632. The examiner can normally be reached on M-Th, 7:30-5:00, F, 7:30-4, Off Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached at (571) 272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



James S. Wozniak
8/1/2007